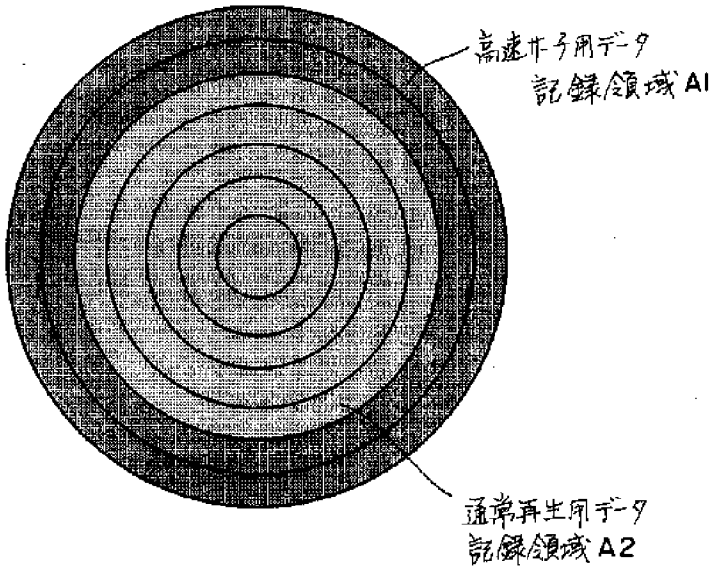
JAPANESE [JP,06-036521,A]

[Translation done.]

Drawing selection Representative draw



[Translation done.]

CLAIMS

[Claim(s)]
[Claim 1]Image data created from image data chosen at the predetermined intervals among image data which video follows as image data for a high-speed search, A disk having recorded on a predetermined field collectively and recording data created from image data which the above-mentioned video follows on the remaining fields of the above-mentioned predetermined field as image data for ordinary reproduction.
[Claim 2]By adding position data of the above-mentioned image data for ordinary reproduction to the above-mentioned image data for a high-speed search, and adding position data of the above-mentioned image data for a high-speed search to it at the above-mentioned image data for ordinary reproduction, The disk according to claim 1 matching the above-mentioned image data for a high-speed search, and the above-mentioned image data for ordinary reproduction.
[Claim 3]Image data for a high-speed search which is image data created from image data chosen at the predetermined intervals among image data characterized by comprising the

following which video follows, Image data for ordinary reproduction which is the data created from image data which the above-mentioned video follows is included, A video decoding device which decrypts a data row which position data of the above-mentioned image data for ordinary reproduction is added to the above-mentioned image data for a high-speed search, and comes to add position data of the above-mentioned image data for a high-speed search to the above-mentioned image data for ordinary reproduction.
A mode selection means which chooses either among a high speed search mode and ordinary reproduction mode.
The first processing means that separates position data of the above-mentioned image data for a high-speed search to the above-mentioned image data for ordinary reproduction, and performs predetermined decoding processing to the above-mentioned image data for a high-speed search when said mode selection means chooses a high speed search mode.
The second processing means that separates position data of the above-mentioned image data for ordinary reproduction to the above-mentioned image data for a high-speed search, and performs predetermined decoding processing to the above-mentioned image data for ordinary reproduction when said mode selection means chooses ordinary reproduction mode.

[Claim 4]Position data of the above-mentioned image data for ordinary reproduction separated by the above-mentioned first processing means is memorized, It has further a position data memory measure which memorizes position data of the above-mentioned image data for a high-speed search separated by the above-mentioned second processing means, The above-mentioned first processing means carries out decoding processing of the data for a high-speed search of a position shown with position data of the above-mentioned image data for a high-speed search memorized by the above-mentioned position data memory measure, The video decoding device according to claim 3, wherein a processing means of the above second carries out decoding processing of the image data for ordinary reproduction of a position shown with position data of the above-mentioned image data for ordinary reproduction memorized by the above-mentioned position data memory measure.
[Claim 5]Image data for a high-speed search which is image data created from image data chosen at the predetermined intervals among image data which video follows, Image data for ordinary reproduction which is the data created from image data which the above-mentioned video follows is included, Position data of the above-mentioned image

data for ordinary reproduction is added to the above-mentioned image data for a high-speed search, It is a video decoding method which decrypts a data row which comes to add position data of the above-mentioned image data for a high-speed search to the above-mentioned image data for ordinary reproduction, When either is chosen among a high speed search mode and ordinary reproduction mode and the above-mentioned high speed search mode is chosen, Position data of the above-mentioned image data for a high-speed search to the above-mentioned image data for ordinary reproduction is separated, When the first decoding processing is performed to the above-mentioned image data for a high-speed search and the above-mentioned ordinary reproduction mode is chosen, A video decoding method separating position data of the above-mentioned image data for ordinary reproduction to the above-mentioned image data for a high-speed search, and performing the second decoding processing to the above-mentioned image data for ordinary reproduction.

[Claim 6]The second decoding processing of the above is performed to image data for ordinary reproduction of a position which memorizes position data of the above-mentioned image data for ordinary reproduction separated [above-mentioned], and is shown with position data of the above-mentioned image data for ordinary reproduction which memorized [above-mentioned], The video decoding method according to claim 5 performing the first decoding processing to data for a high-speed search of a position which memorizes position data of the above-mentioned image data for a high-speed search separated [above-mentioned], and is shown with position data of the above-mentioned image data for a high-speed search which memorized [above-mentioned].

[Translation done.]

JAPANESE [JP,06-036521,A]

[Translation done.]

* NOTICES *

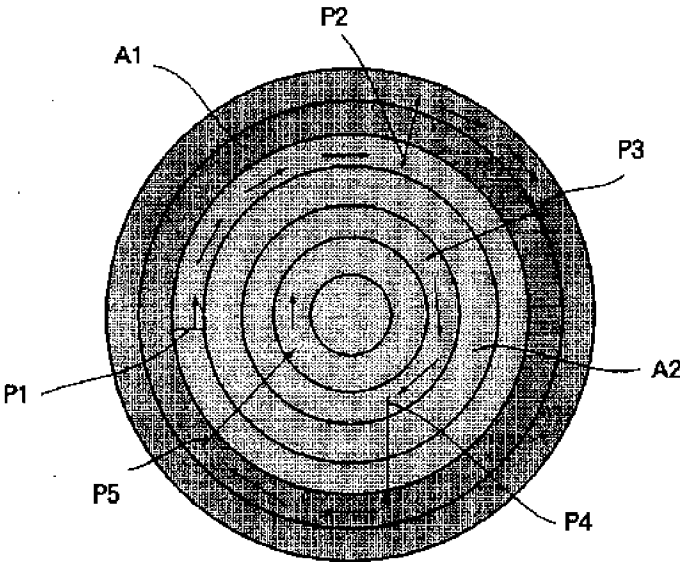
JPO and INPIT are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to the decoding method and device of the disk with which video is recorded, and the data in which video is shown.
[0002]
[Description of the Prior Art]Generally, in the continuous animation, the picture and attention image of order are well alike. So, when the picture which it is going to code from now on is a forward prediction coded image. Take and transmit difference with a front picture in time, and in the case of a both-directions prediction-coding picture, By taking difference with a front picture in time, taking difference with a back picture in time, taking difference with the interpolation picture made from the front picture and the back picture in time, and transmitting the smallest difference among these difference, the relative redundancy of a time base direction is reduced and the amount of transmitted data

Drawing selection Drawing 2



[Translation done.]

is reduced.
[0003]The motion compensation is performed although a forward prediction coded image and a both-directions coded image are made. A motion compensation is a block unit which consists of two or more pixels, and it says reducing transmission data by searching few places of difference most near the noticing block of a previous image, and taking difference with that.
[0004]The difference of the image data taken as mentioned above performs a discrete cosine transform (DCT) by a block unit rather than is transmitted as it is. DCT is not a pixel level about a picture and which frequency component of a cosine function expresses which is contained. The picture element block of 8(line)x8 (pixel) is too changed into the coefficient block of the ingredient of the cosine function of 8x8 by two-dimensional DCT. In the case of a smooth signal, a big value concentrates on the surroundings of a certain coefficient by performing DCT. next, this coefficient -- quantizing (it breaks by the value of 4 or 32 grades) -- most of the coefficient block of 8x8 is set to 0, and only a big coefficient remains. Then, which is transmitted before a non-zero coefficient and its coefficient transmitting the coefficient block of 8x8 with variable length codes (VLC), such as Huffman coding which made zero run of whether 0 continued 1 set.
[0005]Each picture comprises one or more slices (this is mentioned later) at least. And according to the method coded, it is classified into four kinds [like / next], respectively.
(1) When intra coding image coding is carried out, use only the information closed by the one picture. If it puts in another way, when decrypting, a picture can be reconstructed only for the information on an intra coding picture itself. Actually, without taking difference, DCT is performed as it is and it codes. If the intra coding picture is put in everywhere, random access and fast reproduction will become possible.
(2) the intra which the forward prediction coded image forward prediction coded image was before located in time as an estimated image (picture used as the standard which takes difference), and was already decrypted -- use a coded image or a forward prediction coded image. coding actually a difference with the estimated image by which the motion compensation was carried out, that (intra coding) which is coded as it is without taking a difference, and either -- the more efficient one is chosen per macro block (this is mentioned later).
(3) A both-directions prediction-coding picture both-

directions prediction-coding picture, As an estimated image, it is located in front in time and three kinds of the already decrypted intra coding picture or a forward prediction coded image, the intra coding picture which is located back in time and which were already coded or a forward prediction coded image, and the interpolation picture made from the both are used. What has the best efficiency is chosen by a macro block unit in the coded image of the difference after three kinds of this motion compensation, and an intra coding picture.
(4) DC -- intra -- the intra which comprises only a DC coefficient of coded image DCT -- it is a coded image. It does not exist in the same sequence as three sorts of other pictures.
[0006]A slice comprises one or more macro blocks which stand in a row in the scanning order of a picture. In the head of a slice, the motion vector within a picture and the difference of a DC component are reset, and it has data in which the position within a picture is shown, and the first macro block can return, even when an error arises. Therefore, the length and the starting position of a slice are arbitrary, and are changed by the error condition of a transmission line.
[0007]four luminosity blocks Y0 with which the macro block adjoined the longitudinal direction and the sliding direction, Y1, Y2 and Y3, and each color difference block of Cr and Cb in the position same on a picture -- it all comes out and comprises six blocks. The order of transmission is Y0, Y1, Y2, Y3, Cr, and Cb. It is judged in this unit what is used for an estimated image or whether it is good without sending difference. A block comprises a pixel of 8x8 which luminosity or color difference adjoined. DCT is performed in this unit.
[0008]GOP (glue PUOBU picture) -- the intra of one or two or more sheets -- a coded image, 0, or two or more sheets -- un--- intra -- it comprises a coded image.
[0009]
[Problem(s) to be Solved by the Invention]In the conventional MPEG, since the high-speed search is performed to reliance in the intra coding picture included one sheet at a time in one GOP, it is difficult to perform a smooth high-speed search. In order to solve this problem, it is also possible to make the picture equivalent to a forward prediction coded image into an intra coding picture, but. While there is a problem in respect of encoding efficiency since intra coding processing will be performed in spite of being able to code by taking difference with a previous image, if it does in this way, at the time of ordinary

reproduction. intra -- in order to reproduce a coded image as an inter encoding picture (it is reproduced one by one and a series of pictures skip only a specific picture in MPEG -- things cannot be carried out), there is a problem that image quality will deteriorate.

[0010]The 1st purpose of this invention can raise encoding efficiency, and there is in providing the disk which can reduce the read time of coding data while it can perform the smooth high-speed search of video, without degrading the image quality of ordinary reproduction.

[0011]The 2nd purpose of this invention is to provide the video decoding method and device which can perform a smooth high-speed search, without degrading the image quality of ordinary reproduction.

[0012]

[Means for Solving the Problem]The disk according to claim 1 image data created from image data (for example, data of the frame numbers 1 and 5 of drawing 5) chosen at the predetermined intervals among image data which video follows as image data for a high-speed search, Data created from image data (for example, data of the frame numbers 1, 2, 3, 4, and 5 of drawing 5) which it records on a predetermined field (for example, record section A1 of drawing 1) collectively, and video follows as image data for ordinary reproduction, It recorded on the remaining fields (for example, record section A2 of drawing 1) of a predetermined field.

[0013]In the disk according to claim 1, the disk according to claim 2 to image data for a high-speed search. By adding position data (for example, address 1 of drawing 3 (a)) of image data for ordinary reproduction, and adding position data (for example, address 2 of drawing 3 (b)) of image data for a high-speed search to image data for ordinary reproduction, Image data for a high-speed search and image data for ordinary reproduction were matched.

[0014]The video decoding device according to claim 3 this invention, Image data for a high-speed search which is image data created from image data (for example, data of the frame numbers 1 and 5 of drawing 5) chosen at the predetermined intervals among image data which video follows, Image data for ordinary reproduction which is the data created from image data (for example, data of the frame numbers 1, 2, 3, 4, and 5 of drawing 5) which video follows is included, To image data for a high-speed search, position data of image data for ordinary reproduction. A video decoding device which decrypts a data row which (for example, the address 1 of drawing 3 (a)) is added, and

comes to add position data (for example, address 2 of drawing 3 (b)) of image data for a high-speed search to image data for ordinary reproduction is characterized by comprising:
A mode selection means which chooses either among a high speed search mode and ordinary reproduction mode.
The first processing means that separates position data of image data for a high-speed search to image data for ordinary reproduction, and performs predetermined decoding processing to image data for a high-speed search when a mode selection means chooses a high speed search mode (for example, data separation and reverse VLC circuit 8 of drawing 4).
The second processing means that separates position data of image data for ordinary reproduction to image data for a high-speed search, and performs predetermined decoding processing to image data for ordinary reproduction when a mode selection means chooses ordinary reproduction mode (for example, data separation and reverse VLC circuit 4 of drawing 4).

[0015]In the video decoding device according to claim 3 the video decoding device according to claim 4, Position data of image data for ordinary reproduction separated by the first processing means is memorized, A position data memory measure which memorizes position data of the above-mentioned image data for a high-speed search separated by the second processing means. Have further (for example, the position data memory 6 of drawing 4), and the first processing means, Decoding processing of the data for a high-speed search of a position shown with position data of image data for a high-speed search memorized by position data memory measure is carried out, The second processing means carries out decoding processing of the image data for ordinary reproduction of a position shown with position data of image data for ordinary reproduction memorized by position data memory measure.
[0016]Inside of image data which, as for the video decoding method according to claim 5, video follows, Image data for a high-speed search which is image data created from image data (for example, data of the frame numbers 1 and 5 of drawing 5) selected at the predetermined intervals, Image data for ordinary reproduction which is the data created from image data (for example, data of the frame numbers 1, 2, 3, 4, and 5 of drawing 5) which video follows is included, To image data for a high-speed search, position data of image data for ordinary reproduction. It is added by (for

example, the address 1 of drawing 3 (a)), and to the above-mentioned image data for ordinary reproduction. It is a video decoding method which decrypts a data row to which it comes to add position data (for example, address 2 of drawing 3 (b)) of image data for a high-speed search, When either is chosen among a high speed search mode and ordinary reproduction mode and a high speed search mode is chosen, Separate position data of image data for a high-speed search to image data for ordinary reproduction, and when the first decoding processing (for example, reverse VLC) is performed to image data for a high-speed search and ordinary reproduction mode is chosen, position data of image data for ordinary reproduction to image data for a high-speed search is separated, The second decoding processing (for example, reverse VLC) is performed to image data for ordinary reproduction.

[0017]The video decoding method according to claim 6 is the video decoding method according to claim 5, The second decoding processing is performed to image data for ordinary reproduction of a position which memorizes position data of separated image data for ordinary reproduction, and is shown with position data of memorized image data for ordinary reproduction, The first decoding processing is performed to data for a high-speed search of a position which memorizes position data of the separated above-mentioned image data for a high-speed search, and is shown with position data of memorized image data for a high-speed search.

[0018]

[Function]The image data created from the image data chosen at the predetermined intervals in the disk of the composition of claim 1 among the image data which video follows as image data for a high-speed search, It is collectively recorded on a predetermined field and the data created from the image data which video follows is recorded on the remaining fields of a predetermined field as image data for ordinary reproduction. Therefore, since the image data for a high-speed search is not contained in the image data for ordinary reproduction, the image quality of ordinary reproduction does not deteriorate. Since only the image data for a high-speed search can be reproduced collectively, the smooth high-speed search of video can be performed. Since the image data for ordinary reproduction can be coded by taking difference with a previous image, it can raise encoding efficiency. Since the image data for ordinary reproduction which is not used for a high-speed search may not be read from a disk at the time of a high-speed search,

the read time of the image data for a high-speed search is reducible. [0019]In the disk of the composition of claim 2, the image data for a high-speed search and the image data for ordinary reproduction are matched with the position data of the image data for ordinary reproduction added to the image data for a high-speed search, and the position data of the image data for a high-speed search added to the image data for ordinary reproduction. Therefore, the continuity of a picture is securable between the picture reproduced by high-speed search and the picture reproduced by ordinary reproduction.

[0020]In the video decoding device of the composition of claim 3, The inside of the image data which video follows when a high speed search mode is chosen, The position data of the image data for a high-speed search to the image data for ordinary reproduction created from the image data selected at the predetermined intervals is separated, When predetermined decoding processing is performed to the image data for a high-speed search and ordinary reproduction mode is chosen, The position data of the image data for ordinary reproduction to the image data for a high-speed search created from the image data which video follows is separated, and predetermined decoding processing is performed to the image data for ordinary reproduction. Thus, since image data is decrypted after position data is separated from image data, the image quality of a reproduced image is not spoiled. Since it can avoid including the image data for a high-speed search in the image data for ordinary reproduction, the image quality of ordinary reproduction does not deteriorate. Since only the image data for a high-speed search can be reproduced collectively, the smooth high-speed search of video can be performed. Since the image data for ordinary reproduction can be coded by taking difference with a previous image, it can raise encoding efficiency.

[0021]In the video decoding device of the composition of claim 4, When a high speed search mode is chosen, decoding processing of the data for a high-speed search of the position shown with the position data of the image data for a high-speed search memorized by the position data memory measure is carried out, When ordinary reproduction mode is chosen, decoding processing of the image data for ordinary reproduction of the position shown with the position data of the image data for ordinary reproduction memorized by the position data memory measure is carried out. Therefore, the continuity of a picture is securable between the picture reproduced by high-speed search and the picture reproduced by ordinary reproduction.

[0022]In the video decoding method of the composition of claim 5, When either is chosen among a high speed search mode and ordinary reproduction mode and a high speed search mode is chosen, The position data of the image data for a high-speed search to the image data for ordinary reproduction created from the image data chosen at the predetermined intervals among the image data which video follows is separated, When the first decoding processing is performed to the image data for a high-speed search and ordinary reproduction mode is chosen, The position data of the image data for ordinary reproduction to the image data for a high-speed search created from the image data which video follows is separated, and the second decoding processing is performed to the image data for ordinary reproduction. Thus, since image data is decrypted after position data is separated from image data, the image quality of a reproduced image is not spoiled. Since it can avoid including the image data for a high-speed search in the image data for ordinary reproduction, the image quality of ordinary reproduction does not deteriorate. Since only the image data for a high-speed search can be reproduced collectively, the smooth high-speed search of video can be performed. Since the image data for ordinary reproduction can be coded by taking difference with a previous image, it can raise encoding efficiency.

[0023]In the video decoding method of the composition of claim 6, The first decoding processing is performed to the data for a high-speed search of the position which the second decoding processing is performed to the image data for ordinary reproduction of the position shown with the position data of the memorized image data for ordinary reproduction, and is shown with the position data of the memorized image data for a high-speed search. Therefore, the continuity of a picture is securable between the picture reproduced by high-speed search and the picture reproduced by ordinary reproduction.

[0024]

[Example]Drawing 1 shows the composition of one example of the disk of this invention. The image data for a high-speed search is collectively recorded on the record section A1 of the periphery of this disk, and the image data for ordinary reproduction is recorded on the record section A2 of inner circumference.

[0025]The image data for a high-speed search is created from the image data chosen at the predetermined intervals among the image data which video follows, and the image data for ordinary reproduction is created from the image data which video follows. For example, the image data for a

high-speed search is intra coding image data created among a series of frame data shown in drawing 5 only based on the frame data of the frame number 5 only based on the frame data of the frame number 1. The image data for ordinary reproduction uses all a series of frame data of the frame numbers 1, 2, 3, 4, and 5 shown in drawing 5, for example, It comprises combination of the inter encoding image data which takes difference with an estimated image and is created, and the intra coding image data created only based on the frame data of the frame number 5 only based on the frame data of the frame number 1. Intra coding image data is created by DCT (discrete cosine transform), quantization, and VLC (variable length coding), for example. Inter encoding image data is created by a motion compensation, DCT, quantization, and VLC, for example.

[0026]As shown in drawing 3 to the image data for a high-speed search. It is added by the position data (for example, address 1 of drawing 3 (a)) of the image data for ordinary reproduction corresponding to the data, and to the image data for ordinary reproduction. The position data (for example, address 2 of drawing 3 (b)) of the image data for a high-speed search corresponding to the data is added, and the image data for a high-speed search and the image data for ordinary reproduction are matched.

[0027]As the above-mentioned address 1 and the address 2, the sector number of a disk is used, for example. For example, the sector number of the data of the picture for a high-speed search corresponding to the position is added to the frame which hits the multiple of 30 among the image data for ordinary reproduction, and the sector number of the frame of the image data for ordinary reproduction nearest to the frame is added to it at the image data for a high-speed search. Thus, when the image data for a high-speed search and the image data for ordinary reproduction match and a user chooses a high-speed search, If the image data for a high-speed search is accessed and a user switches to ordinary reproduction from a high-speed search, it is renewable by returning a sector number to reliance at the image data for ordinary reproduction.

[0028]Drawing 2 shows the ordinary reproduction of the disk of drawing 1, and one mode of a high-speed search. In [in this example, ordinary reproduction is first started in the position P1 of the record section A2, and] the position P2 of the record section A2, In [it is switched to a high-speed search from ordinary reproduction, and a high-speed search is performed from the position of the record section A1 corresponding to the position P2 of the record section A2,

and] the position P3 of the record section A1, In [it is switched to ordinary reproduction from a high-speed search, and ordinary reproduction is again performed from the position of the record section A2 corresponding to the position P3 of the record section A1, and] the position P4 of the record section A2, In [it is switched to a high-speed search from ordinary reproduction, and a high-speed search is again performed from the position of the record section A1 corresponding to the position P4 of the record section A2, and] the position P5 of the record section A1, It is switched to ordinary reproduction from a high-speed search, and ordinary reproduction is again performed from the position of the record section A2 corresponding to the position P5 of the record section A1. Thus, the continuity of a picture is securable between the picture reproduced by high-speed search and the picture reproduced by ordinary reproduction.

[0029]Drawing 4 shows the example of the video decoding device of this invention. This example is the intra coding image data by which the image data for a high-speed search was created by DCT, quantization, and VLC.

It is constituted noting that the image data for ordinary reproduction consists of intra coding image data, and a motion compensation, DCT, quantization and the inter encoding image data created by VLC.

[0030]The selector 2 supplies the data read from the disk to the data separation and reverse VLC circuit 4 as data for ordinary reproduction, when a user's key operation or remote control operation receives an ordinary reproduction command. The selector 2 supplies the data read from the disk to the data separation and reverse VLC circuit 8 as data for a high-speed search, when a user's key operation or remote control operation receives a high-speed search command.

[0031]From the data into which the data separation and reverse VLC circuit 4 was inputted to the image data for ordinary reproduction. The discrimination information of the position data of the image data for a high-speed search, a motion vector and intra, and an interchange is separated, Reverse VLC of the image data for ordinary reproduction is carried out, the selector 12 is supplied, the position data of the image data for a high-speed search is supplied to the position data memory 6, and a motion vector is supplied to the control input of the frame memory 18.

[0032]The data into which the data separation and reverse VLC circuit 8 was inputted to the image data for a high-speed search, The position data of the image data for

ordinary reproduction is separated, reverse VLC of the image data for a high-speed search is carried out, the selector 12 is supplied, and the position data of the image data for ordinary reproduction is supplied to supply at the position data memory 6. The data separation and reverse VLC circuit 8 stops the function of the motion compensation circuit 16, when supplying the image data for ordinary reproduction by which reverse VLC was carried out to the selector 12.

[0033]The position data memory 6 memorizes the position data of the image data for a high-speed search, and the position data of the image data for ordinary reproduction. CPU10 gives instructions to the driver control section of a playback head so that a playback head may be positioned in the position on the disk which the position data memorized by the position data memory 6 shows.

[0034]When having received the ordinary reproduction command, the selector 12, When supplying the image data for ordinary reproduction which is supplied from the circuit 4 and by which reverse VLC was carried out to the inverse quantization and inverse DCT circuit 14 and having received the high-speed search command, the image data for a high-speed search which is supplied from the circuit 8 and by which reverse VLC was carried out is supplied to the inverse quantization and inverse DCT circuit 14. The inverse quantization and inverse DCT circuit 14 performs reverse DCT while performing inverse quantization to the image data supplied by Ceret Thuc 12.

[0035]The motion compensation circuit 16 reads the estimated image (previous image) shown by a motion vector from the frame memory 18, While performing a motion compensation to the inverse quantization supplied from the circuit 14, and the image data by which reverse DCT was carried out, reproducing a picture and outputting to an indicator (not shown), it writes in the frame memory 18.

[0036]Next, operation of the example of drawing 4 constituted as mentioned above is explained. First, when a user's key operation or remote control operation receives an ordinary reproduction command. CPU10 positions a playback head in the disk position shown with the position data of the image data for ordinary reproduction memorized by the position data memory 6 via a driver control section, and it reads the image data for ordinary reproduction into it from a disk.

[0037]The read image data for ordinary reproduction is supplied to the data separation and reverse VLC circuit 4 via the selector 2. . The data separation and reverse VLC circuit 4 is added to the image data for ordinary reproduction. The

discrimination information of the position data of the image data for a high-speed search, a motion vector and intra, and an interchange is separated, Reverse VLC of the image data for ordinary reproduction is carried out, the selector 12 is supplied, the position data of the image data for a high-speed search is memorized to the position data memory 6, and a motion vector is supplied to the control input of the frame memory 18. And while inverse quantization of the image data for ordinary reproduction which passed along the selector 12 and by which reverse VLC was carried out is carried out by the circuit 14, reverse DCT of it is carried out, and it is memorized by the frame memory 18 while a motion compensation is carried out by the circuit 16, it reverts to the original picture and being displayed on an indicator.

[0038]Next, when a user's key operation or remote control operation receives a high-speed search command. CPU10 positions a playback head in the disk position shown with the position data of the image data for a high-speed search memorized by the position data memory 6 via a driver control section, and it reads the image data for a high-speed search into it from a disk.

[0039]The read image data for a high-speed search is supplied to the data separation and reverse VLC circuit 8 via the selector 2. The data separation and reverse VLC circuit 8 separates the position data of the image data for ordinary reproduction added to the image data for a high-speed search, Reverse VLC of the image data for high-speed Sochi is carried out, the selector 12 is supplied, the position data of the image data for ordinary reproduction is memorized to the position data memory 6, and the function of motion compensation circuit 16 ** is stopped. And the image data for a high-speed search which passed along the selector 12 and by which reverse VLC was carried out is memorized by the frame memory 18 while it is displayed on an indicator, without carrying out reverse DCT and a motion compensation being carried out by the circuit 16, while inverse quantization is carried out by the circuit 14.

[0040]The example of drawing 4 mentioned above can perform ordinary reproduction and a high-speed search by turns, without spoiling the continuity of a picture.

[0041]

[Effect of the Invention]According to the disk of claim 1, the image data created from the image data chosen at the predetermined intervals among the image data which video follows as image data for a high-speed search, Since it recorded on the predetermined field collectively, the data created from the image data which video follows was

recorded on the remaining fields of the predetermined field as image data for ordinary reproduction and the image data for a high-speed search is not contained in the image data for ordinary reproduction, the image quality of ordinary reproduction does not deteriorate. Since only the image data for a high-speed search can be reproduced collectively, the smooth high-speed search of video can be performed. Since the image data for ordinary reproduction can be coded by taking difference with a previous image, it can raise encoding efficiency. Since the image data for ordinary reproduction which is not used for a high-speed search may not be read from a disk at the time of a high-speed search, the read time of the image data for a high-speed search is reducible. [0042]According to the disk of claim 2, the position data of the image data for ordinary reproduction is added to the image data for a high-speed search, Since the position data of the image data for a high-speed search was added to the image data for ordinary reproduction and the image data for a high-speed search and the image data for ordinary reproduction were matched, the continuity of a picture is securable between the picture reproduced by high-speed search and the picture reproduced by ordinary reproduction.

[0043]According to the video decoding device of claim 3, at the time of a high speed search mode. The position data of the image data for a high-speed search to the image data for ordinary reproduction created from the image data chosen at the predetermined intervals among the image data which video follows is separated, Perform predetermined decoding processing to the image data for a high-speed search, and at the time of ordinary reproduction mode. Since the position data of the image data for ordinary reproduction to the image data for a high-speed search created from the image data which video follows is separated and predetermined decoding processing is performed to the image data for ordinary reproduction, Since image data is decrypted after position data is separated from image data, the image quality of a reproduced image is not spoiled. Since it can avoid including the image data for a high-speed search in the image data for ordinary reproduction, the image quality of ordinary reproduction does not deteriorate. Since only the image data for a high-speed search can be reproduced collectively, the smooth high-speed search of video can be performed. Since the image data for ordinary reproduction can be coded by taking difference with a previous image, it can raise encoding efficiency.

[0044]According to the video decoding device of claim 4, at the time of a high speed search mode. Carry out decoding

processing of the data for a high-speed search of the position shown with the position data of the image data for a high-speed search memorized by the position data memory measure, and at the time of ordinary reproduction mode. Since decoding processing of the image data for ordinary reproduction of the position shown with the position data of the image data for ordinary reproduction memorized by the position data memory measure is carried out, the continuity of a picture is securable between the picture reproduced by high-speed search and the picture reproduced by ordinary reproduction.

[0045]According to the video decoding method of claim 5, at the time of a high speed search mode. The position data of the image data for a high-speed search to the image data for ordinary reproduction created from the image data chosen at the predetermined intervals among the image data which video follows is separated, Perform the first decoding processing to the image data for a high-speed search, and at the time of ordinary reproduction mode. Since the position data of the image data for ordinary reproduction to the image data for a high-speed search created from the image data which video follows is separated and the second decoding processing is performed to the image data for ordinary reproduction, Since image data is decrypted after position data is separated from image data, the image quality of a reproduced image is not spoiled. Since it can avoid including the image data for a high-speed search in the image data for ordinary reproduction, the image quality of ordinary reproduction does not deteriorate. Since only the image data for a high-speed search can be reproduced collectively, the smooth high-speed search of video can be performed. Since the image data for ordinary reproduction can be coded by taking difference with a previous image, it can raise encoding efficiency.

[0046]According to the video decoding method of claim 6, the second decoding processing is performed to the image data for ordinary reproduction of the position shown with the position data of the memorized image data for ordinary reproduction, Since the first decoding processing is performed to the data for a high-speed search of the position shown with the position data of the image data for a high-speed search carried out by memorizing, the continuity of a picture is securable between the picture reproduced by high-speed search and the picture reproduced by ordinary reproduction.

[Translation done.]